

Claims

- [c1] 1. A part marking comprising a first multiplicity of machine-detectable marks arranged in accordance with a two-dimensional redundant bit pattern, said first multiplicity of marks having an appearance to human vision resembling a first character, and said two-dimensional redundant bit pattern comprising a repeating pattern of first and second bit strings forming respective first and second codes identifying said first character and a second character respectively, said second character being different than said first character.
- [c2] 2. The part marking as recited in claim 1, further comprising a second multiplicity of machine-detectable marks arranged in accordance with said two-dimensional redundant bit pattern, said second multiplicity of marks having an appearance to human vision resembling said second character.
- [c3] 3. The part marking as recited in claim 2, further comprising machine-detectable first and second spatial registration indicators placed such that said first and second multiplicities of machine-detectable marks will be spatially registered when said first and second spatial registration indicators are spatially registered.
- [c4] 4. The part marking as recited in claim 1, wherein said machine-detectable marks comprise dots superimposed on an optically contrasting background.
- [c5] 5. The part marking as recited in claim 1, wherein said first and second codes are ASCII codes.
- [c6] 6. The part marking as recited in claim 2, further comprising a third multiplicity of machine-detectable marks arranged in accordance with said two-dimensional redundant bit pattern, said third multiplicity of marks having an appearance to human vision resembling a third character, said third character being different than said first and second characters, and said repeating pattern further comprising a third bit string forming a third code identifying said third character.
- [c7] 7. A part marking comprising first and second human-readable characters respectively formed in first and second areas occupied by first and second

arrays of machine-detectable marks arranged in accordance with a two-dimensional redundant bit pattern, said arrays of machine-detectable marks in said first and second areas respectively having first and second shapes indicative of said first and second human-readable characters respectively, and said two-dimensional redundant bit pattern comprising a repeating pattern of first and second bit strings forming respective first and second codes identifying said first and second human-readable characters respectively, said second human-readable character being different than said first human-readable character.

[c8] 8. The part marking as recited in claim 7, further comprising machine-detectable first and second spatial registration indicators formed in said first and second areas respectively and placed such that said first and second arrays of machine-detectable marks will be spatially registered when said first and second spatial registration indicators are spatially registered.

[c9] 9. The part marking as recited in claim 7, wherein said machine-detectable marks comprise dots superimposed on an optically contrasting background.

[c10] 10. The part marking as recited in claim 7, wherein said first and second codes are ASCII codes.

[c11] 11. The part marking as recited in claim 7, further comprising a third human-readable character formed by a third area occupied by a third array of machine-detectable marks arranged in said two-dimensional redundant bit pattern, said third array of machine-detectable marks having a third shape indicative of said third human-readable character, and said repeating pattern further comprising a third bit string forming a third code identifying said third human-readable character, said third human-readable character being different than said first and second human-readable characters.

[c12] 12. A system for automatic identification of a part, comprising:
a part comprising first and second multiplicities of machine-detectable marks arranged in accordance with a two-dimensional redundant bit pattern, said first and second multiplicities of marks having an appearance to human vision

resembling first and second characters respectively, and said two-dimensional redundant bit pattern comprising a repeating pattern of first and second bit strings forming respective first and second codes identifying said first and second characters respectively, said second character being different than said first character;

an imager for imaging an area of said part occupied by said marks to produce electrical signals having characteristics which allow discrimination between electrical signals derived from imaging of marks and electrical signals derived from imaging of areas outside of marks; and

a computer programmed to derive said first and second codes from said electrical signals output by said imager.

[c13] 13. The system as recited in claim 12, wherein said computer is programmed to perform the steps of:

digitizing said electrical signals to form first and second bit maps respectively comprising bits corresponding to said first and second multiplicities of machine-detectable marks;

spatially registering said first and second bit maps;

forming a union of said spatially registered bit maps; and

detecting bit strings, corresponding to said first and second codes, in the composite bit map resulting from the union of said spatially registered first and second bit maps.

[c14] 14. The system as recited in claim 13, wherein said part further comprises machine-detectable first and second spatial registration indicators placed such that said first and second multiplicities of machine-detectable marks will be spatially registered when said first and second spatial registration indicators are spatially registered.

[c15] 15. The system as recited in claim 12, wherein said machine-detectable marks comprise dots superimposed on an optically contrasting background.

[c16] 16. The system as recited in claim 12, wherein said first and second codes are ASCII codes.

[c17] 17. A method of marking parts for automatic identification, comprising the steps of forming first and second human-readable characters respectively in first and second areas on said part by applying first and second arrays of machine-detectable marks arranged in a two-dimensional redundant bit pattern, said first and second arrays of machine-detectable marks respectively having first and second shapes indicative of said first and second human-readable characters respectively, and said two-dimensional redundant bit pattern comprising a repeating pattern of first and second bit strings forming respective first and second codes identifying said first and second human-readable characters respectively, said second human-readable character being different than said first human-readable character.

[c18] 18. A method of automatically identifying parts, comprising the following steps: marking a part with first and second character-shaped arrays of marks; acquiring an image of said part marking; digitizing the acquired image to form first and second bit maps comprising bits corresponding to said first and second character-shaped arrays of marks; spatially registering the first and second bit maps; forming a union of the spatially registered bit maps; and decoding the composite bit map resulting from the union of the spatially registered bit maps to identify the part.

[c19] 19. A system for automatically identifying parts, comprising: a part marked with first and second character-shaped arrays of marks; an imager for acquiring an image of said part marking; and a computer programmed to perform the following steps: digitizing the acquired image to form first and second bit maps comprising bits corresponding to said first and second character-shaped arrays of marks; spatially registering the first and second bit maps; forming a union of the spatially registered bit maps; and decoding the composite bit map resulting from the union of the spatially registered bit maps to identify said part.

[c20] 20. The system as recited in claim 19, wherein said machine-detectable marks

comprise dots superimposed on an optically contrasting surface of said part.

Sizing and Weight		Performance		Durability		Comfort		Fit	
Size	Weight	Speed	Endurance	Resistance	Flexibility	Support	Cushioning	Heel Drop	Arch Support
US 7-8	10.5 lbs	12.5 mph	100 miles	150 lbs	100 miles	100 lbs	100 miles	100 lbs	100 miles
US 9-10	11.5 lbs	13.5 mph	110 miles	160 lbs	110 miles	110 lbs	110 miles	110 lbs	110 miles
US 11-12	12.5 lbs	14.5 mph	120 miles	170 lbs	120 miles	120 lbs	120 miles	120 lbs	120 miles
US 13-14	13.5 lbs	15.5 mph	130 miles	180 lbs	130 miles	130 lbs	130 miles	130 lbs	130 miles
US 15-16	14.5 lbs	16.5 mph	140 miles	190 lbs	140 miles	140 lbs	140 miles	140 lbs	140 miles
US 17-18	15.5 lbs	17.5 mph	150 miles	200 lbs	150 miles	150 lbs	150 miles	150 lbs	150 miles
US 19-20	16.5 lbs	18.5 mph	160 miles	210 lbs	160 miles	160 lbs	160 miles	160 lbs	160 miles
US 21-22	17.5 lbs	19.5 mph	170 miles	220 lbs	170 miles	170 lbs	170 miles	170 lbs	170 miles
US 23-24	18.5 lbs	20.5 mph	180 miles	230 lbs	180 miles	180 lbs	180 miles	180 lbs	180 miles
US 25-26	19.5 lbs	21.5 mph	190 miles	240 lbs	190 miles	190 lbs	190 miles	190 lbs	190 miles
US 27-28	20.5 lbs	22.5 mph	200 miles	250 lbs	200 miles	200 lbs	200 miles	200 lbs	200 miles
US 29-30	21.5 lbs	23.5 mph	210 miles	260 lbs	210 miles	210 lbs	210 miles	210 lbs	210 miles
US 31-32	22.5 lbs	24.5 mph	220 miles	270 lbs	220 miles	220 lbs	220 miles	220 lbs	220 miles
US 33-34	23.5 lbs	25.5 mph	230 miles	280 lbs	230 miles	230 lbs	230 miles	230 lbs	230 miles
US 35-36	24.5 lbs	26.5 mph	240 miles	290 lbs	240 miles	240 lbs	240 miles	240 lbs	240 miles
US 37-38	25.5 lbs	27.5 mph	250 miles	300 lbs	250 miles	250 lbs	250 miles	250 lbs	250 miles
US 39-40	26.5 lbs	28.5 mph	260 miles	310 lbs	260 miles	260 lbs	260 miles	260 lbs	260 miles
US 41-42	27.5 lbs	29.5 mph	270 miles	320 lbs	270 miles	270 lbs	270 miles	270 lbs	270 miles
US 43-44	28.5 lbs	30.5 mph	280 miles	330 lbs	280 miles	280 lbs	280 miles	280 lbs	280 miles
US 45-46	29.5 lbs	31.5 mph	290 miles	340 lbs	290 miles	290 lbs	290 miles	290 lbs	290 miles
US 47-48	30.5 lbs	32.5 mph	300 miles	350 lbs	300 miles	300 lbs	300 miles	300 lbs	300 miles
US 49-50	31.5 lbs	33.5 mph	310 miles	360 lbs	310 miles	310 lbs	310 miles	310 lbs	310 miles
US 51-52	32.5 lbs	34.5 mph	320 miles	370 lbs	320 miles	320 lbs	320 miles	320 lbs	320 miles
US 53-54	33.5 lbs	35.5 mph	330 miles	380 lbs	330 miles	330 lbs	330 miles	330 lbs	330 miles
US 55-56	34.5 lbs	36.5 mph	340 miles	390 lbs	340 miles	340 lbs	340 miles	340 lbs	340 miles
US 57-58	35.5 lbs	37.5 mph	350 miles	400 lbs	350 miles	350 lbs	350 miles	350 lbs	350 miles
US 59-60	36.5 lbs	38.5 mph	360 miles	410 lbs	360 miles	360 lbs	360 miles	360 lbs	360 miles
US 61-62	37.5 lbs	39.5 mph	370 miles	420 lbs	370 miles	370 lbs	370 miles	370 lbs	370 miles
US 63-64	38.5 lbs	40.5 mph	380 miles	430 lbs	380 miles	380 lbs	380 miles	380 lbs	380 miles
US 65-66	39.5 lbs	41.5 mph	390 miles	440 lbs	390 miles	390 lbs	390 miles	390 lbs	390 miles
US 67-68	40.5 lbs	42.5 mph	400 miles	450 lbs	400 miles	400 lbs	400 miles	400 lbs	400 miles
US 69-70	41.5 lbs	43.5 mph	410 miles	460 lbs	410 miles	410 lbs	410 miles	410 lbs	410 miles
US 71-72	42.5 lbs	44.5 mph	420 miles	470 lbs	420 miles	420 lbs	420 miles	420 lbs	420 miles
US 73-74	43.5 lbs	45.5 mph	430 miles	480 lbs	430 miles	430 lbs	430 miles	430 lbs	430 miles
US 75-76	44.5 lbs	46.5 mph	440 miles	490 lbs	440 miles	440 lbs	440 miles	440 lbs	440 miles
US 77-78									